said vitrifiable materials, wherein said vitrifiable materials comprise materials selected from the group consisting of batch materials, cullet, vitrifiable waste, liquid combustible elements, solid combustible elements, and mixtures thereof.

39. (New) Process according to claim 38, wherein the combustible elements are selected from the group consisting of coal, composite materials comprising glass and plastic, and organic materials.

40. (New) Process according to claim 38, wherein the vitrifiable materials contain composite materials comprising glass and metal.

41. (New) Process according to claim 38, additionally comprising refining said vitrifiable materials, at least partly in the form of a thin layer, after melting.

42. (New) Process according to claim 38, wherein the oxidizer gas comprises air, oxygen-enriched air, or oxygen.

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43. (New) Process according to claim 38, wherein the melting of the vitrifiable materials takes place in at least one melting chamber which is equipped with burners passing through its side walls or passing through the floor wall or suspended from the roof or from superstructures, or any combination of sidewalls, floor and roof, so that combustion regions of said burners or combustion gases develop in the mass of vitrifiable materials being melted.

44. (New) Process according to claim 38, wherein the combustion regions created by combustion of the combustible mixture or gaseous products resulting from combustion of the combustible mixture convectively stir the vitrifiable materials.

45. (New) Process according to claim 43, wherein the height of the mass of vitrifiable materials in the melting chamber and the height at which the combustion regions or

gases resulting from the combustion develop, are adjusted so that the said gases remain within the mass of said vitrifiable materials.

46. (New) Process according to claim 38, wherein the melting is preceded by a step of preheating the vitrifiable materials to at most 900°C.

47. (New) Process according to claim 41, wherein refining is carried out on the molten vitrifiable materials in a foamy state.

48. (New) Process according to claim 47, wherein said molten vitrifiable materials in the foamy state comprise bubbles, most of which being at least 100 μm in diameter.

49. (New) Process according to claim 41, wherein the vitrifiable materials contain refining promoters.

50. (New) Process according to claim 38, wherein the melting is carried out at 1400°C at most.

51. (New) Process according to claim 41, wherein melting is carried out in a melting chamber, and the refining is carried out in at least one static compartment lying downstream of the melting chamber, and having a flow-canal structure, and provided with one or more means for forcing the molten vitrifiable materials to be refined in a thin layer with plug-flow.

52. (New) Process according to claim 51, wherein the said one or more means prevent the formation of a return glass current in the mass of molten vitrifiable materials flowing through said flow-canal structure.

53. (New) Process according to claim 41, wherein the refining is carried out in a melting chamber containing a siege or in at least one compartment lying downstream of the melting chamber, forcing the molten vitrifiable materials to follow a descending path by gravity between at least two adjacent walls which are essentially mutually parallel and at least

partially submerged in the mass of molten vitrifiable materials and are inclined with respect to the plane of the siege of the said melting chamber or of the said downstream compartment.

54. (New) Process according to claim 53, wherein the said walls are incorporated into at least one longitudinally partitioned tube of approximately rectangular section.

55. (New) Process according to claim 51, wherein melting is carried out in a melting chamber and the refining is carried out in at least one compartment lying downstream of the melting chamber and capable of being rotated in order to ensure centrifugal refining, which compartment is provided with one or more means for forcing the molten vitrifiable materials to be refined in a thin layer, over a thickness R1/R0 of at least 0.8 or over an absolute thickness of at most 10 cm.

56. (New) Process according to claim 43, wherein all or some of the vitrifiable materials are introduced into the melting chamber below the level of the mass of vitrifiable materials being melted.

57. (New) Apparatus comprising:

at least one melting chamber equipped with burners which are fed with at least one natural gas fossil fuel and with an air or oxygen oxidizer, the said burners being placed so as to inject said fuel and oxidizer, or gases resulting from combustion of said fuel and oxidizer, below the level of the mass of vitrifiable materials introduced into said melting chamber; said vitrifiable materials comprising materials selected from the group consisting of batch materials, cullet, vitrifiable waste, liquid combustible elements, solid combustible elements, and mixtures thereof.

58. (New) Apparatus according to claim 57, which additionally comprises:

means for refining the molten vitrifiable materials in the form of a thin layer, in the melting chamber or in at least one refining compartment downstream of said chamber.

59. (New) Apparatus comprising:

at least one melting chamber equipped with burners which are fed with at least one natural gas fossil fuel and with an air or oxygen oxidizer, the said burners being placed so as to inject the said fuel and oxidizer, or gases resulting from combustion of said fuel and oxidizer, below the level of the mass of vitrifiable materials introduced into said melting chamber; and

means for refining the molten vitrifiable materials in the form of a thin layer, in the melting chamber or in at least one refining compartment downstream of said chamber.

60. (New) Apparatus according to claim 59, wherein the refining compartment(s) is (are) static and has (have) a flow canal comprising a channel and a roof, one or more means of forcing the molten vitrifiable materials to be refined in said canal in a thin layer, with plug flow, and one of said means being selection of the ratio of the average height to the average width of the said canal to less than 1.

61. (New) Apparatus according to claim 59, wherein the refining compartment(s) is (are) static and has (have) a flow canal comprising a channel and a roof, one or more means for forcing the molten vitrifiable materials to be refined in the said canal in a thin layer, and one of said means being at least one or more means for adjusting or regulating the flow of the molten vitrifiable materials at the inlet, or at the outlet, or at both the inlet and the outlet, of the refining compartment.

62. (New) Apparatus according to claim 60, wherein the flow canal is equipped with heating means.

63. (New) Apparatus according to claim 60, wherein the flow canal is provided with means for homogenizing the vitrifiable materials.

64. (New) Apparatus according to claim 59, wherein the melting chamber, or a refining compartment downstream of the melting chamber, comprises at least one structural means for thin-film refining, in the form of at least two adjacent walls which are approximately mutually parallel, intended to be at least partially submerged in the mass of molten vitrifiable material and inclined with respect to the siege of said chamber or of said compartment.

65. (New) Apparatus according to claim 64, wherein said walls are incorporated into at least one longitudinally partitioned tubular element.

66. (New) Apparatus according to claim 65, wherein said tubular element(s) is (are) in the melting chamber and emerge(s) in a discharge opening downstream of said chamber.

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67. (New) Apparatus according to claim 59, wherein the refining compartment includes at least one device capable of being rotated in order to ensure centrifugal refining, the internal walls of the said device defining approximately a cavity in the form of a hollow cylinder which is vertical in its central part.

68. (New) Apparatus according to claim 67, wherein the device capable of being rotated is provided in the cavity with partitions over at least part of its height, forcing the molten vitrifiable materials to flow between the internal walls of the device and said partitions, the average distance between the walls and the partitions defining the thickness of the thin layer.

69. (New) Apparatus according to claim 68, wherein the average distance between the walls and the partitions is defined by a ratio of their radii R1/R0 of at least 0.8.

70. (New) Apparatus according to claim 67, wherein the walls of the device are lined with electrocast refractory pieces.

71. (New) Apparatus according to claim 67, wherein the device is provided with one or more means for trapping solid particles.

72. (New) Apparatus according to claim 57, wherein the melting chamber is equipped with at least one means for introducing vitrifiable materials below the level of the mass of vitrifiable materials being melted.

36 D4 73. (New) Apparatus comprising a melting chamber with walls made of a material comprising refractory materials, said chamber being associated with a cooling system using a water-based fluid, and wherein the walls are lined with a lining of a molybdenum-based metal.

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74. (New) Apparatus according to claim 73, wherein said lining is held at a distance from said walls.

75. (New) Apparatus according to claim 73, wherein said lining constitutes a surface for contact with the molten materials, which surface is continuous or drilled with holes.

76. (New) Apparatus according to claim 57, wherein at least some of the burners of the melting chamber are designed to also be able to inject, into the mass of vitrifiable materials, a fluid which does not participate in the combustion, as a substitute for the oxidizer or the fuel, or for both the oxidizer and the fuel.

77. (New) Process according to claim 39, wherein the combustible elements are composite materials comprising glass and plastic, and which are laminated glazing or mineral fibers with organic binders.

78. (New) Process according to claim 40, wherein the composite materials comprising glass and metal are at least one of glazing with metallic coating, glazing with enamel coating, and glazing with electrical connecting means.

79. (New) Process according to claim 47, wherein the molten vitrifiable materials have a density of approximately 0.5 to 2 g/cm^3.

80. (New) Process according to claim 48, wherein most of the bubbles are at least 200 μm in diameter.

81. (New) Process according to claim 49, wherein the refining promoters are selected from the group consisting of coke-based reducing additives having an average particle size of less than 200 μm, sulphate-based additives, fluorine-based additives, chlorine-based additives, and $NaNO_3$-based additives.

82. (New) Process according to claim 41, wherein melting is carried out at 1380°C at most, and refining at 1500°C at most.

83. (New) Process according to claim 41, wherein melting is carried out at 1350°C at most, and refining at 1500°C at most.

84. (New) Process according to claim 51, wherein the thin layer has a depth of at most 15 cm.

85. (New) Process according to claim 51, wherein the thin layer has a depth of at most 10 cm.

86. (New) Apparatus according to claim 60, wherein the thin layer is over a depth of less than 15 cm.

87. (New) Apparatus according to claim 60, wherein the ratio is less than 0.5.

88. (New) Apparatus according to claim 61, wherein the thin layer has a depth of less than 15 cm.

89. (New) Apparatus according to claim 62, wherein said heating means has oxygen burners above the molten vitrifiable materials.

90. (New) Apparatus according to claim 65, wherein said at least one longitudinally partitioned tubular element has an approximately rectangular section.

91. (New) Apparatus according to claim 70, wherein said electrocast refractory pieces include a thermal insulator incorporated so as to avoid being crushed by centrifugal force.

92. (New) Apparatus according to claim 71, wherein said one or more means for trapping solid particles is located in a lower zone of the device and being in the form of notches or grooves made in the internal walls.

93. (New) Apparatus according to claim 72, comprising at least two said means, in the form of one or more openings associated with a feed-screw supply means.

94. (New) Apparatus according to claim 76, wherein the fluid is an N_2-containing inert gas, a water-based coolant, or a mixture thereof.

95. (New) Process according to claim 53, wherein refining is carried out in the melting chamber.

96. (New) Apparatus according to claim 58, wherein said means for refining is in the melting chamber.

97. (New) Apparatus according to claim 59, wherein said means for refining is in the melting chamber.

98. (New) A product obtained by the process of claim 38.

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99. (New) A product obtained by the process of claim 41.

DISCUSSION OF THE AMENDMENT

All of the claims have been cancelled and been replaced with new Claims 38-99.

Claim 38 is based on the combination of original Claims 1 and 7, except that the refining step is omitted. Support for omission of the refining step is supported in the specification at page 33, lines 20-35.

Claims 39 and 40 are based on original Claim 7, together with the specification, at page 10.

Claim 41 corresponds to the refining step as defined in the original Claim 1.

Claims 42 to 46 correspond to original Claims 2 to 6, respectively.

Claims 47 to 56 correspond to original Claims 8 to 17, respectively.

Claim 57 corresponds to original Claim 18, and is analogous to Claim 38.

Claim 58 recites refining means, a means deleted from original Claim 18 concerning the refining chamber.

Claim 59 is based on original Claim 18, keeping the embodiment of operating the refining step in the melting chamber itself.

Claim 60 corresponds to original Claim 19.

Claims 61 to 72 correspond to original Claims 20 to 31, respectively.

Claim 73 combines the subject matters of original Claims 32 and 33.

Claims 74-76 correspond to original Claims 34-36, respectively.

Claims 77-94 are based on subject matter omitted from the original claims in presenting new Claims 38-76.

Claims 95-97 depend on Claims 53, 58 and 59, respectively, and recite that refining is carried out in the melting chamber.

Claims 98 and 99 are a product made by the process of Claims 38 and 41, respectively.

No new matter is believed to have been added by the above amendment. Claims 38-99 are now pending in the application.